IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: SHO	WA CORPORATION)	Examiner: BURCH
Serial Nu	mber:	10/736150)	Art Unit: 3683
Filed:	12/15/2003)	
For:	HYDRAULIC SHOCK ABSORBING APPARATUS OF VEHICLE)	
Docket Number: 13712)		

STATEMENT OF THE SUBSTANCE OF THE INTERVIEW

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313

25 March 2009

Sir:

This communication is responsive to your Interview Summary dated 25 February 2009, describing an Interview conducted on 20 February 2009, having a shortened statutory period for reply set to expire 25 March 2009. Accordingly, this response is timely filed on 25 March 2009.

Please see the attached comments regarding the Interview.

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STATEMENT OF THE SUBSTANCE OF THE INTERVIEW

The Examiner states in the Interview Summary that the Fig. 2 check valve 44 would provide

some level of damping during expansion as a fluid passes by the valve 44 which is spring

biased closed due to the presence of element 44b. This understanding by the Examiner is

contrary to all of the written disclosure in this application, including the original

Specification.

Fig. 2 illustrates the shock absorber which is arranged to provide damping during the

compression stroke. Following is a general description of the operation of a shock absorber,

and in particular the operation of this shock absorber which is designed to damp only during

the compression stroke.

Normally a shock absorber has one portion fixedly attached to a frame of a vehicle, and the

other movable section attached to a wheel assembly. There is normally also an external

spring which works in conjunction with the shock absorber. For example, when a vehicle

hits a bump in the road, an external force acts upon the wheel which compresses the spring

and the shock absorber at that moment. During the compression of the shock absorber, the

piston/rod assembly moves in the downward direction as shown in Fig. 2. The external

force drives the piston and rod assembly down which immediately increases abruptly the

pressure below the piston assembly, owing to the fact that hydraulic fluid is largely

incompressible. This abrupt pressure change acts upon the check valve 44 to immediately

close it. This is repeatedly set out in the Specification, where it is stated that the check

valve of this shock absorber is closed during compression and open during expansion.

There is no disclosure of any throttling function or gradual closing of the check valve. It is

according to our Specification either open or closed. In fact, when the pressure on the

lower surface of the check valve is higher than the pressure on the upper surface of the

check valve, the check valve immediately moves up and closes. At that moment, no fluid

can pass through the check valve, and all fluid is forced through the compression side

passage and is throttled controllably by the compression side damping valve 43.

Meanwhile, the piston/rod assembly of the corresponding other shock absorber which is

designed to operate in the opposite manner, is moving in the same direction, but is not

performing any intentional or desired damping, because fluid is moving freely through the

open check valve in that shock absorber during the moments that the check valve is

correspondingly closed in the compression shock absorber.

When the external force is removed (the vehicle has moved beyond the bump), the

suspension spring urges the wheel to return to its rest position, expanding both shock

absorbers immediately upon removal of the particular external force from the bump. This

change happens very abruptly. The instant that the direction of force is changed on the

piston rod assemblies, the check valve in the compression shock absorber immediately

opens completely, while the check valve in the corresponding shock absorber immediately

closes completely.

The valve spring 44b referred to by the Examiner is not an active spring which biases the

movement of the check valve during operation. It is a back-up structure as stated in the

description. It is not balancing the check valve against pressure forces. Our check valve is

free to and is intended to slide wide open immediately when the pressure forces change

direction due to the change in direction of the external force.

When the piston/rod of Fig. 2 changes direction and moves up, the check valve immediately

opens, allowing the fluid to freely flow into the region below the piston.

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It is desired that the fluid flow back into the region below the piston as rapidly as possible,

to allow the piston/rod assembly to move up, to be ready to move back down in a repeated

manner, to prepare for its next working cycle of damping during compression. The

invention is designed to allow the piston/road assembly to "cock" back to a ready-to-work

position as quickly as possible in the absence of unintended frictional effects. This quick

cocking back to the ready position is a desirable characteristic leading to higher

performance and sensitivity of the shock absorber in the one shock absorber, and vice-versa

for the other shock absorber.

It is stated numerous times in the original Specification that the check valve is open during

expansion and closed during compression. There is no disclosure of the check valve being

capable of doing anything other than simply opening and closing according to the function of

a normal check valve. "Opening" means fully open, and "closing" means fully closed.

In the embodiment illustrated in Fig. 2, the check valve is a rigid doughnut-shaped valve

which moves full open when the pressure is higher on the top surface than on the bottom

surface, and full closed when the pressure is higher on the bottom surface than on the top

surface.

The foregoing description does not limit the claimed invention in any way beyond the

appropriate limitations according to the claim language, and is provided here only to help

clarify the function of shock absorbers in general, and particular features of the shock

absorber as disclosed and claimed.

Respectfully submitted,

/Keith H. Orum/

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